HCE1000A, HCE1000W 50Hz Icemakers

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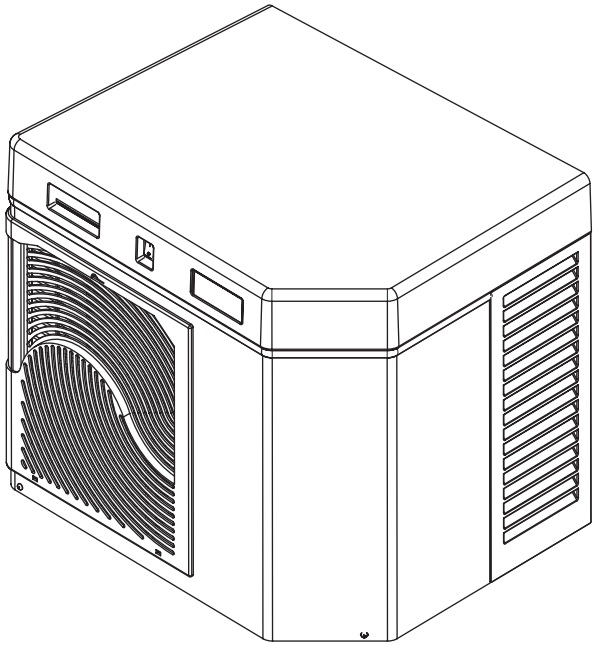
Operation and Service Manual



Following installation, please forward this manual to the appropriate operations person.

FOLLETT
Innovative solutions, inspired by ice

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Follett Corporation
Equipment Return Policy

Follett equipment may be returned for credit under the following conditions:

1. The equipment is new and unused.
2. A return authorization number has been issued by customer service within 30 days after shipment.
3. Follett receives the equipment at the factory in Easton, PA within 30 days after issuance of the return authorization number.
4. The equipment must be returned in Follett packaging. If the packaging has been damaged or discarded, Follett will forward, at the customer's expense, new packaging.

Note: Return freight charges are the responsibility of the customer. If equipment is returned and is damaged because of improper packaging, Follett Corporation will not be held responsible.

Credit will be issued when:
The equipment has been inspected by Follett and deemed suitable to be returned to stock.

Note: A 15% restocking charge will be deducted from the credit. If the cost to return the product to stock exceeds 15%, the actual cost will be deducted.

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Welcome to Follett

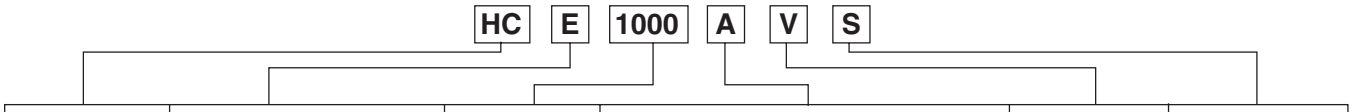
Follett equipment enjoys a well-deserved reputation for excellent performance, long-term reliability and outstanding after-the-sale support. To ensure that this equipment delivers the same degree of service, we ask that you review the installation manual (provided as a separate document) before beginning to install the unit. Our instructions are designed to help you achieve a trouble-free installation. Should you have any questions or require technical help at any time, please call our technical service group at (800) 523-9361 or (610) 252-7301.

Before you begin

After uncrating and removing all packing material, inspect the equipment for concealed shipping damage. If damage is found, notify the shipper immediately and contact Follett Corporation so that we can help in the filing of a claim, if necessary.

Check your paperwork to determine which model you have. Follett model numbers are designed to provide information about the type and capacity of Follett equipment. Following is an explanation of the different model numbers in the 1000 series.

Horizon Series Icemaker Model Number Configurations



Icemaker Model Series	Voltage	Capacity Model Series	Condenser	Application	Configuration
HC Horizon Chewblet®	E 230/50/1 *(self-contained only)*	1000 up to 1036 lbs (471kg) 1400 up to 1450 lbs (658kg)	A Air-cooled, self-contained W Water-cooled, self-contained	H Harmony™ B Ice storage bin	S Satellite-fill™ T Top-mount

Chewblet is a registered trademark of Follett Corporation, registered in the US.

⚠ CAUTION

- Warranty does not cover exterior or outside installations
- Moving parts. Do not operate with front cover removed.
- Hot parts. Do not operate with cover removed.
- To reduce risk of shock, disconnect power before servicing
- Most ice machine cleaners contain citric or phosphoric acid, which can cause skin irritation. Read caution label on product and follow instructions carefully.
- Ice is slippery. Maintain counters and floors around dispenser in a clean and ice-free condition.
- Ice is food. Follow recommended cleaning instructions to maintain cleanliness of delivered ice.

Specifications

Electrical

Each icemaker requires its own separate circuit with electrical disconnect within 10 ft (6m).
Equipment ground required.
Standard electrical – 220-240/50/1
Maximum icemaker fuse – 15 amps
Amperage – 11 amps
Maximum power – 3600 watts
Climatic class – N
6 ft (2m) cord provided on icemaker

⚠ CAUTION

- Plug must be provided by the end-user and must conform to standard EN 60 335-2-24:2003 of the end destination
- If the supply cord is damaged, it must be replaced by the manufacturer or their service agent, or a similarly qualified technician in order to avoid a hazard

Plumbing

3/8" OD push-in water inlet
3/4" MPT drain
1/4" FPT condenser inlet (water-cooled condenser only)
1/4" FPT condenser drain (water-cooled condenser only)

Notes: 3/4" vented drain line must slope a minimum of 1/4" per foot (6mm per 30.4cm run).
Drain to be hard piped and insulated.
To prevent back flow, do not connect drains.
Separate drains for icemaker and condenser.
Water shut-off recommended within 10 feet (3m).
Follett recommends installation of Follett model 00130286 activated carbon filter in icemaker inlet water line.

Ambient

Air temperature	100˚F/38˚C max.	50˚F/10˚C min.
Water temperature	90˚F/32˚C max.	45˚F/7˚C min.
Water pressure – potable	70 psi max. (483 kPa)	10 psi min. (69 kPa)

Note: Water-cooled condenser pressure 150 psi max (1034kPa); 10 psi min (69kPa)

Heat rejection

Air-cooled rejects 10,500 BTU/hr to air (2646Kcal/hr) to air
Water-cooled rejects 10,500 BTU/hr to water (2646Kcal/hr) to water

Ice production

Air-cooled icemaker capacity/24 hrs.

Inlet Water Temperature F/C	Ambient Air Temperature F/C						
F	60	70	80	90	100	
C	16	21	27	32	38	
50	1024	937	878	800	727	lbs
10	465	426	399	363	330	kg
60	966	896	820	748	676	lbs
16	439	407	372	340	307	kg
70	920	849	777	**706**	634	lbs
21	418	386	353	**321**	288	kg
80	888	832	730	663	576	lbs
27	403	378	332	301	262	kg
90	825	747	678	610	520	lbs
32	375	339	308	277	236	kg

Water-cooled icemaker capacity/24 hrs.

Inlet Water Temperature F/C	Ambient Air Temperature F/C						
F	50	60	70	80	90	
C	10	16	21	27	32	
50	791	791	791	791	791	lbs
10	359	359	359	359	359	kg
60	762	762	762	762	762	lbs
16	346	346	346	346	346	kg
70	734	734	734	734	**734**	lbs
21	333	333	333	333	**333**	kg
80	674	674	674	674	674	lbs
27	306	306	306	306	306	kg
90	645	645	645	645	645	lbs
32	341	341	341	341	341	kg

Dimensions and clearances

Entire front of icemaker must be clear of obstructions/connections to allow removal.

1" (26mm) clearance above icemaker for service.

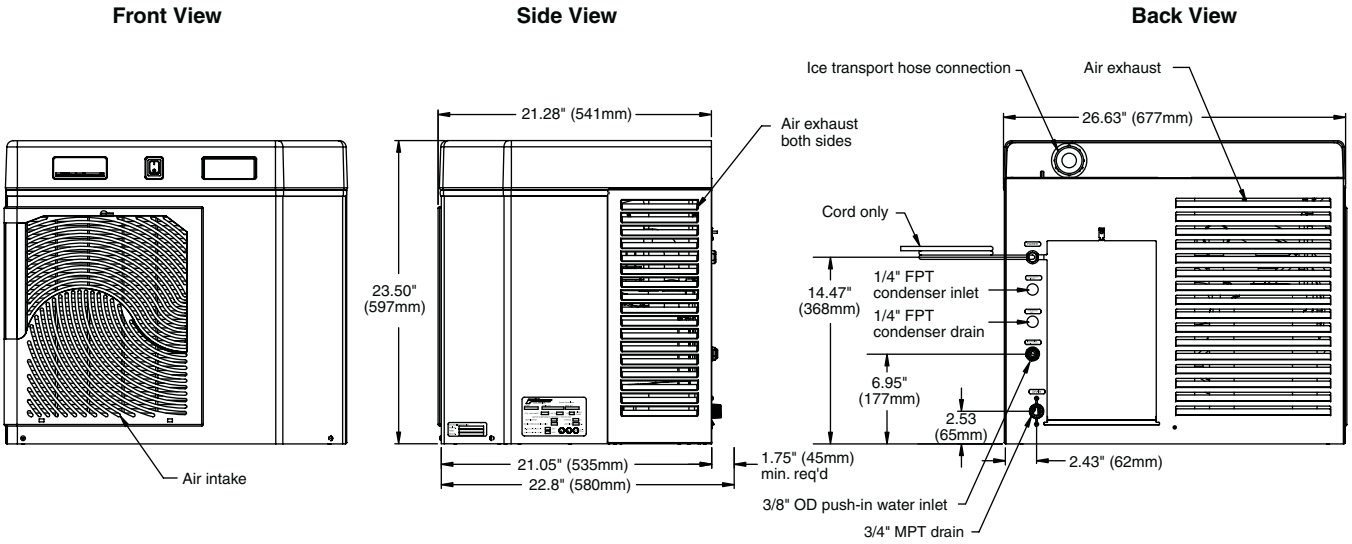
1" (26mm) minimum clearance on sides.

The intake and exhaust air grilles must provide at least 150 sq in (968 sq cm) of open area.

Air-cooled model HCE1000A icemakers – 18" (458mm) minimum clearance between discharge and air intake-grilles.

⚠ CAUTION

- Keep ventilation openings in the appliance enclosure or built-in structure, clear of obstruction



Operation

Cleaning and preventive maintenance (all models)

Note: Do not use bleach to sanitize or clean the icemaker.

Preventive maintenance

Periodic cleaning of Follett's icemaker system is required to ensure peak performance and delivery of clean, sanitary ice. The recommended cleaning procedures that follow should be performed at least as frequently as recommended, and more often if environmental conditions dictate.

Cleaning of the condenser can usually be performed by facility personnel. Cleaning of the icemaker system, in most cases, should be performed by your facility's maintenance staff or a Follett authorized service agent. Regardless of who performs the cleaning, it is the operator's responsibility to see that this cleaning is performed according to the schedule below. Service problems resulting from lack of preventive maintenance will not be covered under the Follett warranty.

Weekly exterior care

The exterior may be cleaned with a stainless cleaner such as 3M Stainless Steel Cleaner & Polish or equivalent.

Monthly condenser cleaning (air-cooled icemaker only)

1. Use a vacuum cleaner or stiff brush to carefully clean condenser coils of air-cooled icemakers to ensure optimal performance.
2. When reinstalling counter panels in front of remote icemakers, be sure that ventilation louvers line up with condenser air duct.

Semi-annual evaporator cleaning (every 6 months)

⚠ WARNING

- Wear rubber gloves and safety goggles (and/or face shield) when handling ice machine cleaner or sanitizer

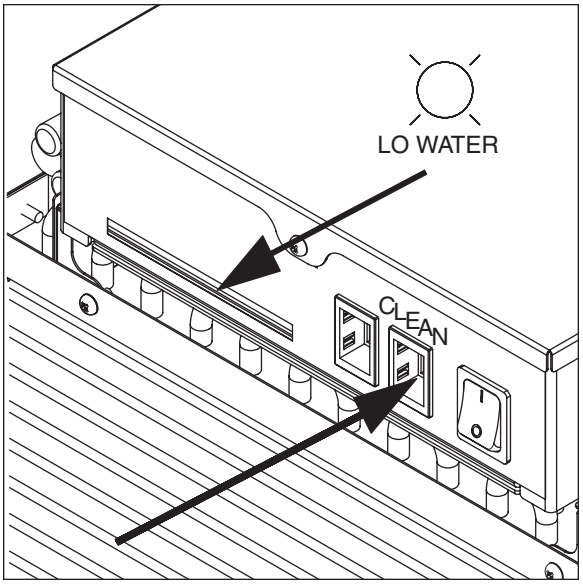
⚠ CAUTION

- Use only Follett approved SafeCLEAN™ Cleaner (part #00132001) and NU-CALGON IMS-II SANITIZER
- Do not mix Cleaner and Sanitizer solutions together
- DO NOT USE BLEACH
- It is a violation of Federal law to use these solutions in a manner inconsistent with their labeling
- Read and understand all labels printed on packaging before use

Note: Complete procedure for cleaning an sanitizing MUST be followed. Ice must be collected for 10 minutes before putting ice machine back into service.

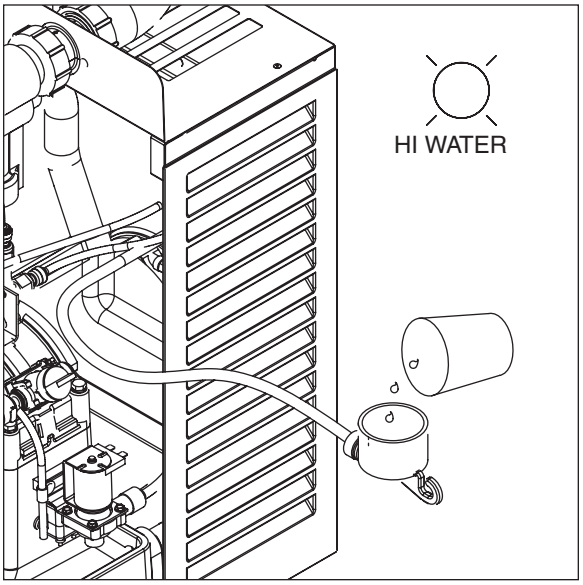
1. To clean – Remove cover. Press the CLEAN button. The machine will drain. Wait for the LO WATER light to come on (Fig. 1).

Fig. 1



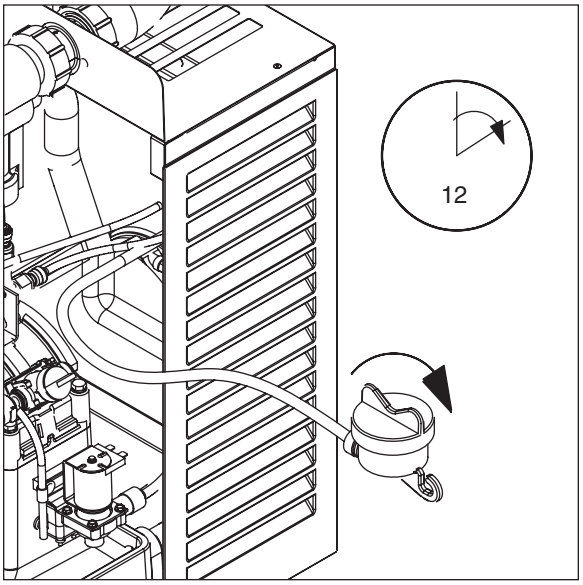
2. Mix 1 gallon (3.8L) 120˚F (49˚C) water and 7 ounces (198g) (one 7 ounce packet of Follett SafeCLEAN ice machine cleaner, part# 00132001). Locate cleaning cup. Fill until HI WATER light comes on (Fig. 2).
   Note: Do not use bleach to sanitize or clean the icemaker.

Fig. 2



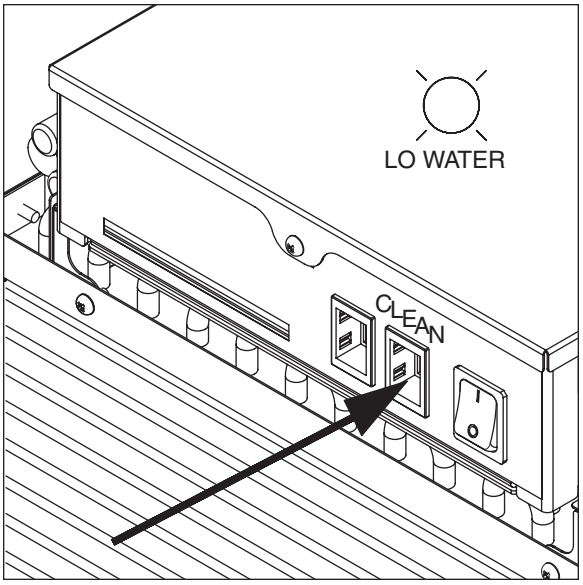
3. Replace cover on cleaning cup. Wait until machine restarts. Machine will clean, then flush 3 times in approximately 12 minutes (Fig. 3).

Fig. 3



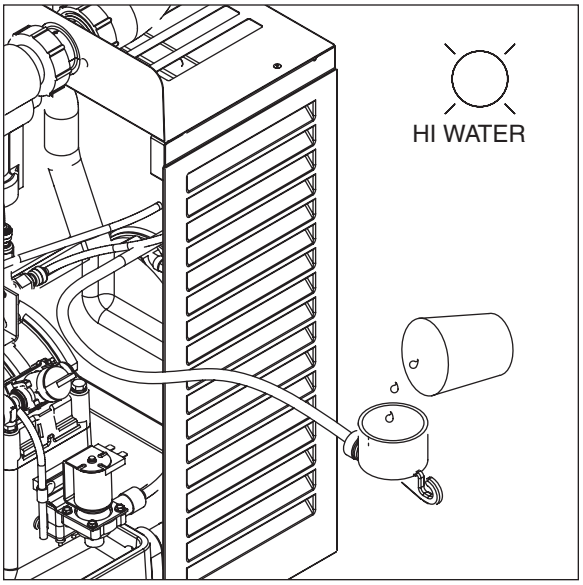
4. To sanitize – Press CLEAN button. The machine will drain. Wait for LO WATER light to come on (Fig. 4).

Fig. 4



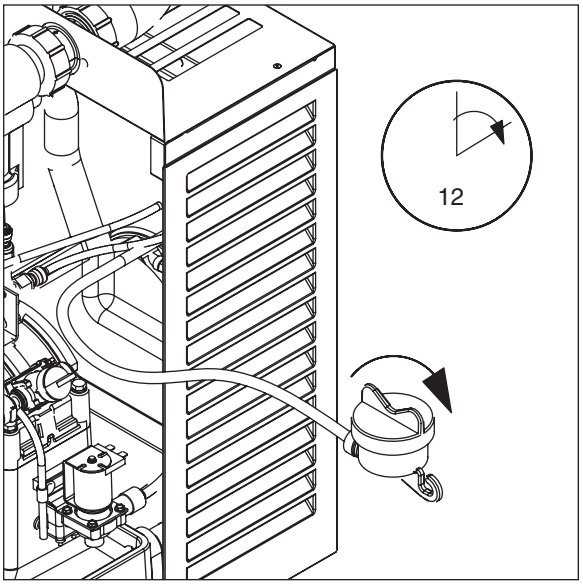
5. Mix 1 gallon 120˚F (49˚C) water and 1.6 ounces (48ml) NU-CALGON IMS-II SANITIZER. Fill until HI WATER light comes on (Fig. 5).
   Note: Do not use bleach to sanitize or clean the icemaker.

Fig. 5



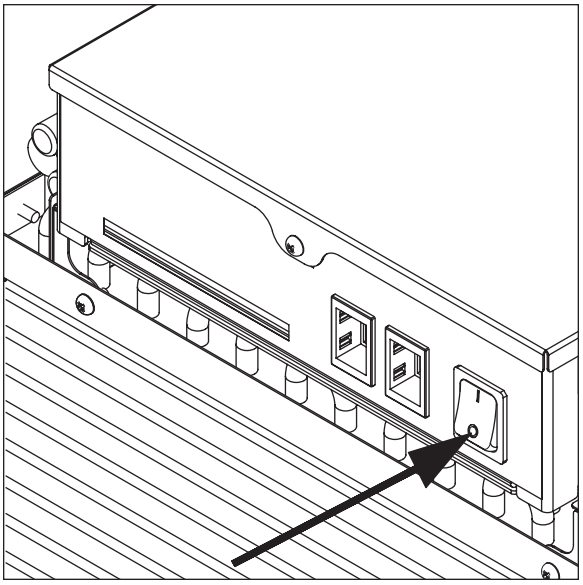
6. Replace cover on cleaning cup. Wait until machine restarts. Machine will sanitize, then flush 3 times in approximately 12 minutes (Fig. 6).

Fig. 6



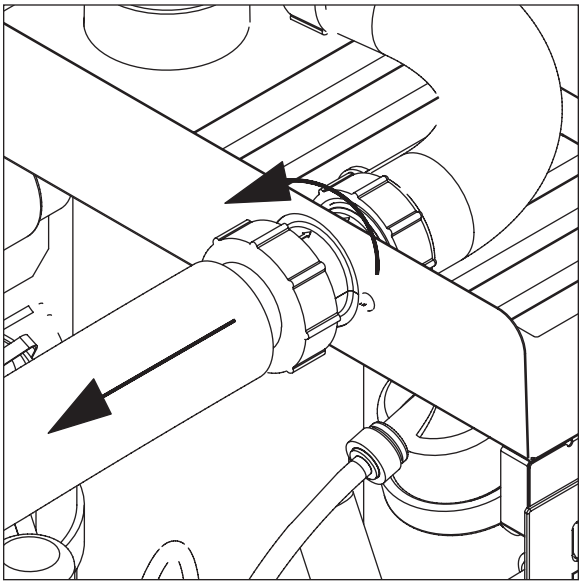
7. To clean transport tube – Press power switch OFF (Fig. 7).

Fig. 7



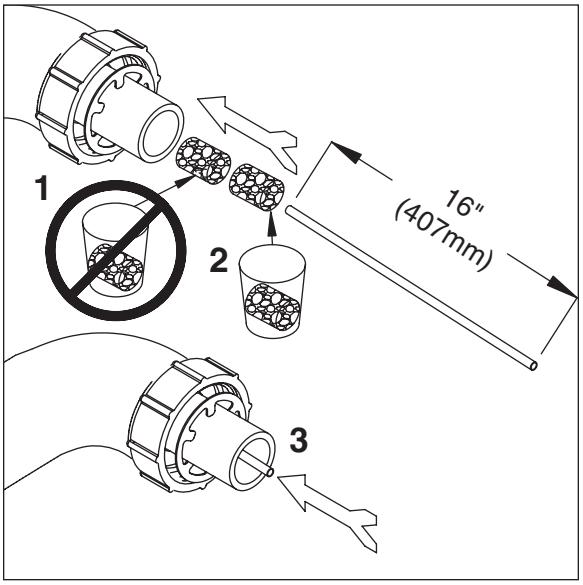
8. Disconnect coupling as shown (Fig. 8).

Fig. 8



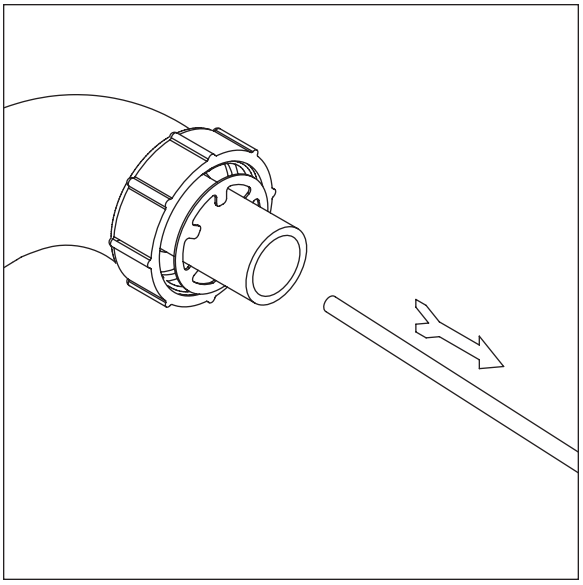
9. Using disposable food service grade gloves, insert dry Sani-Sponge™ (kit part# 00132068). Next, insert Sani-Sponge soaked in Nu-Calgon IMS-II sanitizer solution. Push both Sani-Sponges down ice transport tube with supplied pusher tube (Fig. 9).

Fig. 9



10. Remove and discard 16" (407mm) pusher tube (Fig. 10).

Fig. 10



11. Reconnect coupling. Press power switch ON. Ice pushes Sani-Sponges through tube (Fig. 11).

Fig. 11

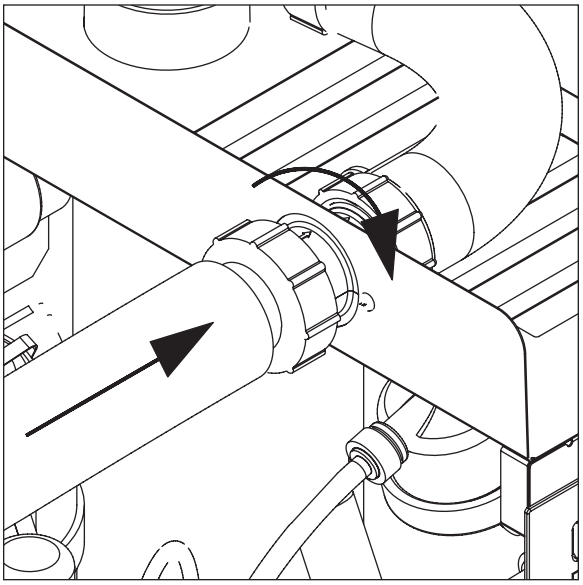
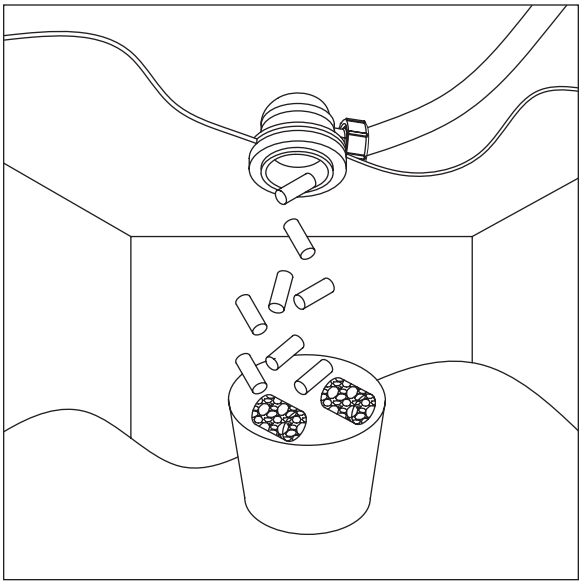


Fig. 12

12. Place a sanitary (2 gallon or larger) container in bin or dispenser to collect Sani-Sponges and ice for 10 minutes. Collect 5.5 lbs of ice from unit. Discard ice and Sani-Sponges (Fig. 12).



Service

Icemaker operation (all models)

Follett's icemaker consists of five distinct functional systems covered in detail as follows:

- Water system
- Electrical control system
- Mechanical assembly
- Refrigeration system
- Bin full

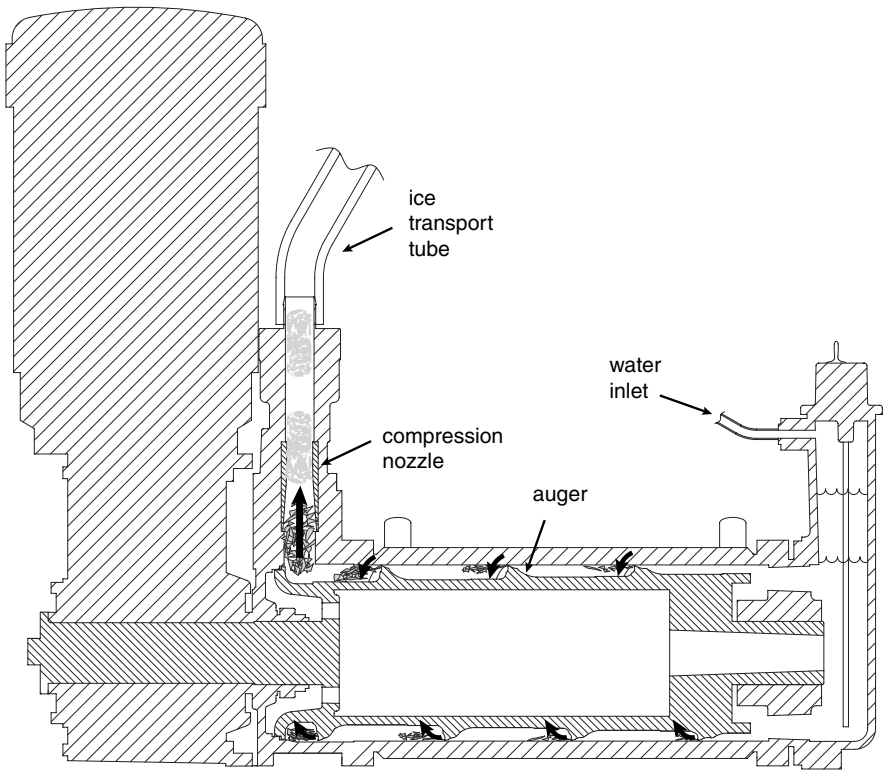
The Horizon icemaker overview

The Follett Horizon icemaker uses a horizontal, cylindrical evaporator to freeze water on its inner surface. The refrigeration cycle is continuous; there is no batch cycle. The evaporator is flooded with water and the level is controlled by sensors in a reservoir. A rotating auger (17 RPM @ 50Hz) continuously scrapes ice from the inner wall of the evaporator. The auger moves harvested ice through the evaporator into an ice extrusion canal. The ice is forced through a restrictive nozzle that squeezes out the water and creates the Chewblet. The continuous extrusion process pushes the Chewblets through a transport tube into a dispenser or bin.

A solid state PC board controls and monitors the functionality of the ice machine. In addition to sequencing electrical components, the board monitors various operational parameters. A full complement of indicator lights allows visual status of the machine's operation. Additionally, the PC board controls the self-flushing feature of the icemaker. The evaporator water is periodically drained and replenished to remove minerals and sediment.

A unique "bin full" detection system is incorporated in the Horizon icemaker. A sensor located at the ice discharge port of the machine detects the position of the transport tube. When the bin fills up with ice, the transport tube moves out of the normal running position, and the sensor turns the ice maker off. A domed housing at the end of the transport tube contains the ice extrusion loads during shut down.

Harvest system diagram



Water system

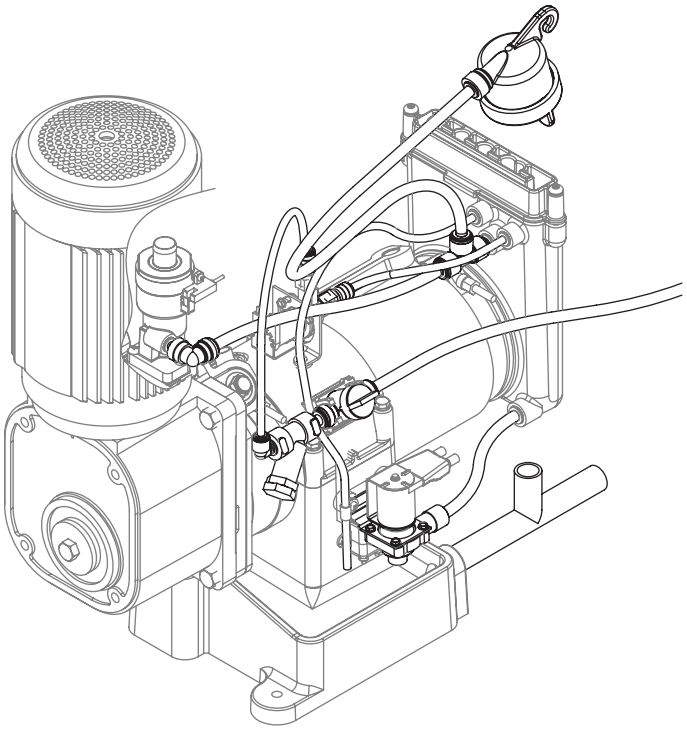
The water level in the evaporator is controlled by a feed solenoid and level detecting sensors. Referencing the diagram below, water sensing rods extend down into the reservoir at the end of the evaporator assembly. The system works via electrical conductivity as follows:

One of the longest probes is a common. When water is between any of the other probes and the common, the PC board will sense the activation. During normal operation, the water level rises and falls between the Normal High and Normal Low sensors. As water is consumed to make ice, the level will fall until the Normal Low sensor is exposed, triggering the water feed solenoid on. Water will fill until the Normal High sensor is activated.

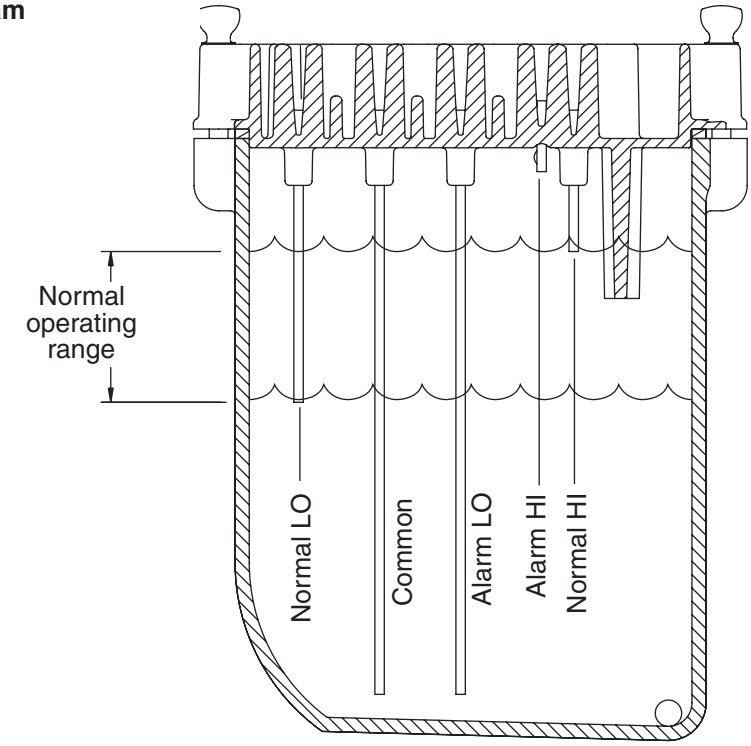
Additional sensors are incorporated in the reservoir for alarm and cleaning/flushing conditions.

Note: The potable water dissolved solids content must be greater than 30 mg/l for the water control system to function properly. If using reverse osmosis water filtration system, ensure T.D.S level is greater than 30 mg/l.

Water system diagram



Water level diagram

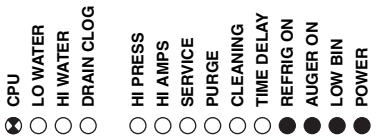


Electrical system

Normal control board operation

The PC board indicator lights provide all the information necessary to determine the machine's status. Green indicator lights generally represent “go” or normal operation; Yellow indicators represent normal off conditions; Red indicators generally represent alarm conditions, some of which will lock the machine off.

A green light labeled POWER indicates power to the machine. A flashing green light labeled CPU is normal and indicates that the Central Processing Unit “heart beat” is working. All other normal operation status indicators are covered as follows:

Ice machine disposition	Operating conditions
Legend: ● ON ○ OFF ◐ ON or OFF ⊠ FLASHING	
1. Ice machine is making ice.  	1. **Normal running.**
2. Ice machine is not making ice. 	2. **Normal time delay.** When the bin fills with ice, the LOW BIN light goes out and the refrigeration and auger drive systems immediately shut down. (**Note:** The fan motor will continue to run for 10 minutes to cool condenser) The TIME DELAY light comes on, initiating the time delay period. When the time delay expires, the machine will restart provided that the LOW BIN light is on.
3. Ice machine is not making ice. 	3. **Normal purge indicator.** After a selected period of ice making time has elapsed (2 or 6 hours), the ice machine will automatically self-flush. The compressor will shut down but the fan and gearmotor will continue to run. After the flush is complete the machine will refill and start without a time delay.

Test points:
The Horizon PC board incorporates on-board test points that can be used to determine various electrical outputs. The test point holes allow a standard probe to be inserted for quick voltage measurement. For 208-230 systems, use TP-4 (L2) as the common for testing outputs for solenoids, motors, etc.

Time delay and self-flushing jumpers:
The duration of the Time Delay period, the time between normal shut down and restart, is jumper selectable. Jumpers J33 and J34 can be used to select a time delay value of either 1/2, 1, 2, or 3 hours. The factory default setting is 1 hour. Jumper J32 sets the self-flushing interval to 2 or 6 hours, and J31 either enables or disables self-flushing feature. The factory default setting is enabled flushing every 6 hours.

Error faults:
The Horizon PC board monitors various operating parameters including high and low pressure, auger gearmotor amperage limits, clogged drain, and high and low water alarm conditions. There are two types of errors namely "hard" or "soft". A hard error is one that shuts the machine off and will not allow restart until the reset button is pressed. Even cycling power will not reset a hard error. A soft error can either be automatically reset should the condition rectify, or if power is cycled. Should an error occur, consult the troubleshooting guide in this manual or a Follett service technician. **Note:** there are two types of LO WATER and HI AMPS errors as listed below.

Soft errors:
HI AMPS: The PC board monitors the amperage of the auger motor. Should the gear motor experience current draw above the 3.8 amps limit the machine will shut down and the TIME DELAY, HI AMP, and SERVICE LED's will be illuminated. After the time delay the machine will restart and the TIME DELAY, HI AMP, and SERVICE LED's will clear.

HI WATER: A sensor in the water reservoir is positioned at the very top of the reservoir cap. Should water rise to this high alarm sensor, a soft error will occur. The machine will operate with this alarm active, however the water feed solenoid will not be on. The alarm will turn off should water recede from the sensor.

LO WATER: During operation, the water level cycles between the normal low and normal high sensors. Should the water be shut off to a running machine, a soft error will occur. The error sequence is as follows: During operation, the water level falls to the normal low sensor, and when it does the water feed solenoid is energized. If water is not detected at the normal low sensor within 120 seconds, a soft error will occur. The machine will shut down, but the water feed solenoid will remain energized. Should water return, it will fill to the normal low sensor and the machine will resume normal operation. The error will clear automatically.

Hard error:
HI AMPS:

1. "Two strikes" feature. If the gearmotor has a second HI AMP occurance during the countdown period (6 hours after a HI AMP time delay) a hard error will occur and the HI AMP and SERVICE LED's will be illuminated.
2. No current. To prevent the refrigeration system from running without gearmotor rotation the PC board will indicate HIGH AMP and SERVICE if the drive relay is energized and there is no current draw.

HI PRESSURE: Should the refrigeration pressure rise above 425 psi, a hard error will occur. Even if pressure fall-back below the reset point of 295 psi, the error will not clear and the machine will not restart.

Note: Split Systems do not have a High pressure sensor on the evaporator module.

DRAIN CLOG: The drain clog sensor, located in the plastic drain pan behind the drain solenoid, will detect the presence of water just below the top edge of the pan. If water does not properly flow out of the drain pan it will rise to the sensor, especially during a self-flushing purge cycle.

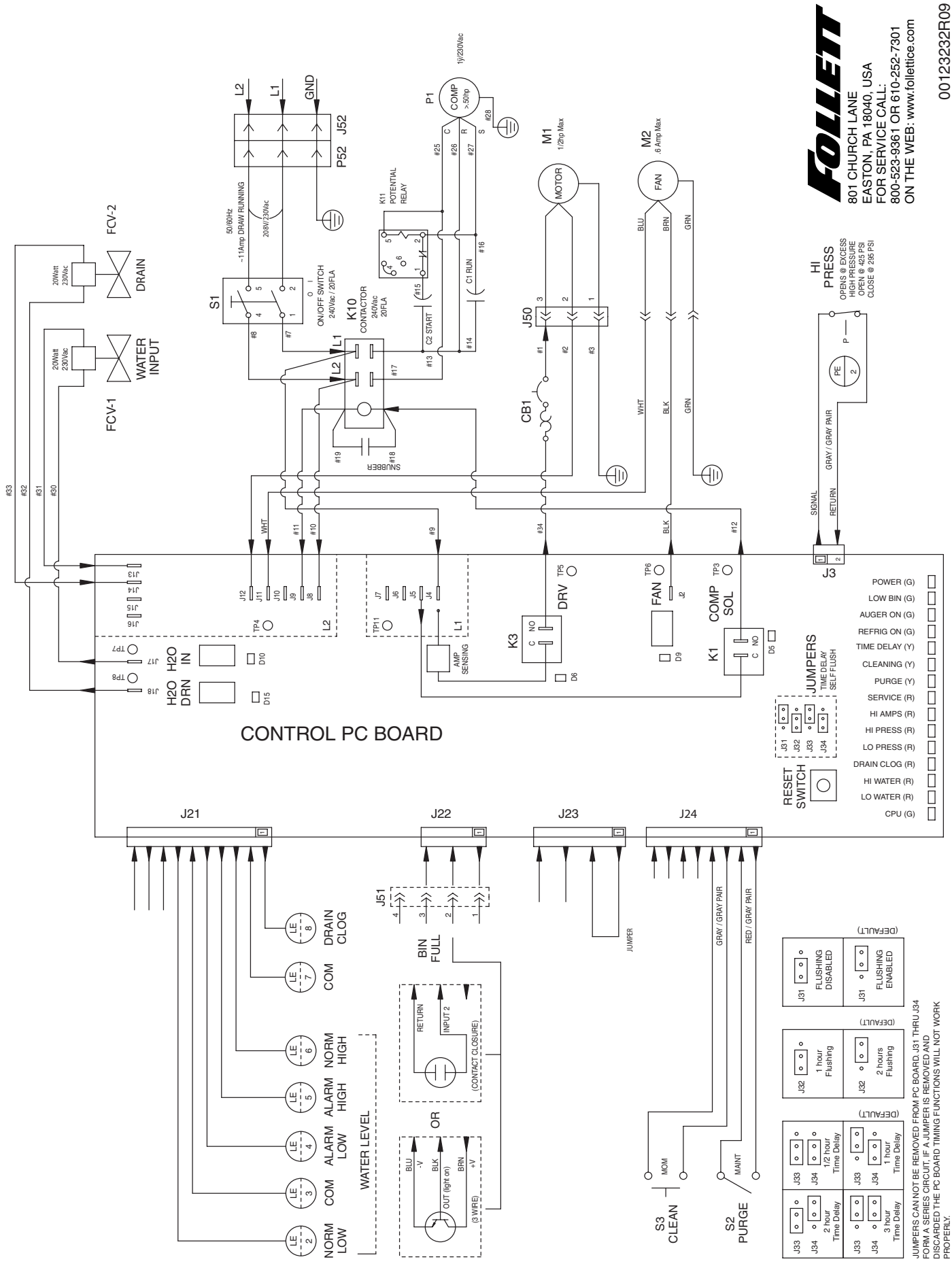
LO WATER:

1. There is a sensor in the water reservoir that reaches down to the very bottom. The machine will not start if water is not present at this sensor.
2. A hard error will occur should water not be present within 60 seconds of power up or if the sensors are disconnected or damaged.

Relay output indication:
Each relay on the board has an indicator light associated with its output. For example, when the relay for the water feed solenoid is energized, the adjacent indicator light glows green.

Comp/Sol output:
The output for the compressor is labeled COMP/SOL. For split systems, where the condensing unit is mounted remotely from the evaporator module, the COMP/SOL output is wired to the refrigerant solenoid.

Wiring diagram



Compressor data

Compressor current draw

Air-cooled					
Ambient air temp.	60˚F/16˚C	70˚F/21˚C	80˚F/27˚C	90˚F/32˚C	100˚F/38˚C
	6.4A	6.4A	6.8A	7.4A	7.6A
Water-cooled					
Condenser water temp	50˚F/10˚C	60˚F/16˚C	70˚F/21˚C	80˚F/27˚C	90˚F/32˚C
	6.5A	6.6A	6.8A	7.3A	7.5A
Locked rotor amps	54				

Gearmotor data

	Brother
Gearmotor current	2.8A (nominal)
Locked rotor amps	15 amps

Resistance of windings

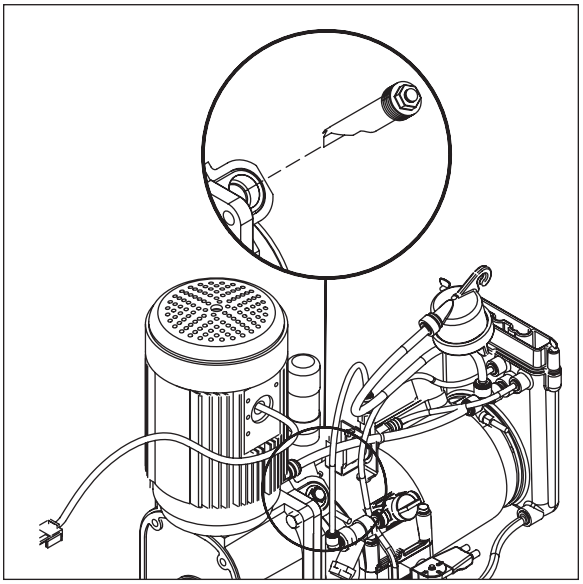
208-230 vac gearmotor (Brother)	6.2Ω
Compressor start winding	3.0Ω
Compressor run winding	1.4Ω
Fan motor	38Ω

Mechanical system

Evaporator disassembly

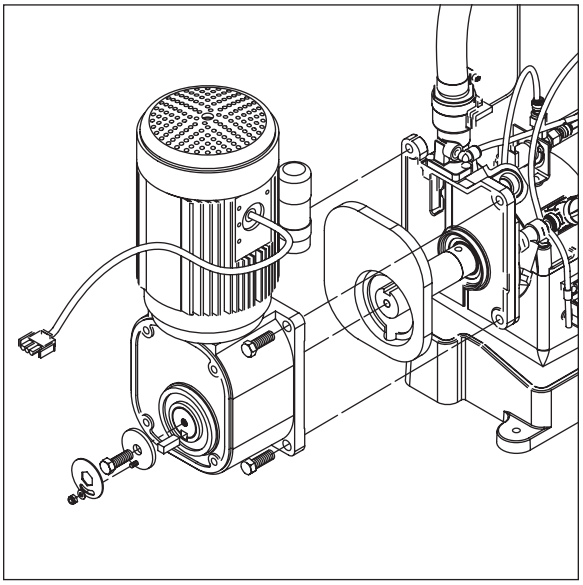
1. Press PURGE button to purge evaporator, and then turn power OFF.
2. Unscrew and remove stream divider as shown.

Fig. 13



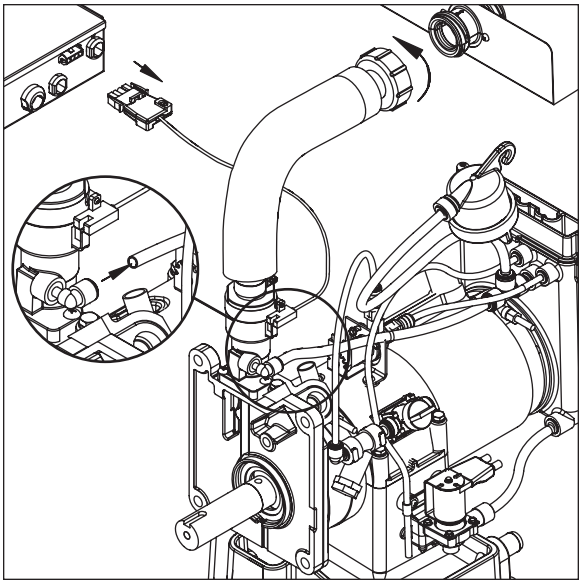
3. Unplug and remove gearmotor as shown.
4. Remove all traces of anti-seize compound from the auger shaft.

Fig. 14



5. Unscrew and disconnect transport tube from louvered docking assembly.
6. Unplug sensor at the electrical box.
7. Remove vent tube from shuttle housing as shown.

Fig. 15



8. Loosen nut on V-band clamp and remove.
9. Remove V-band clamp from front of evaporator.
10. Remove main housing as shown.

Fig. 16

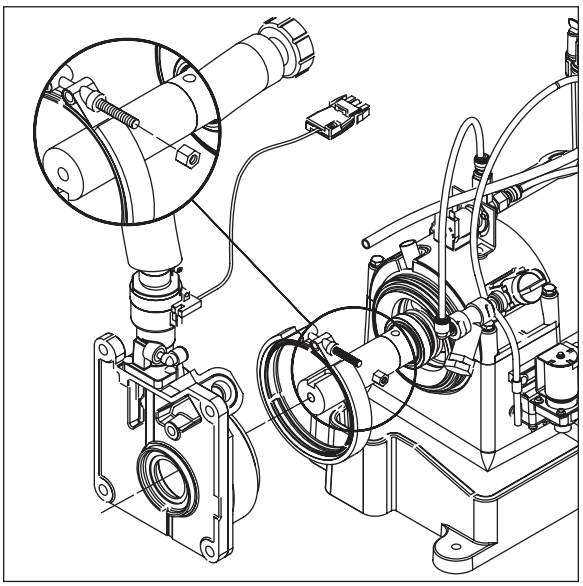
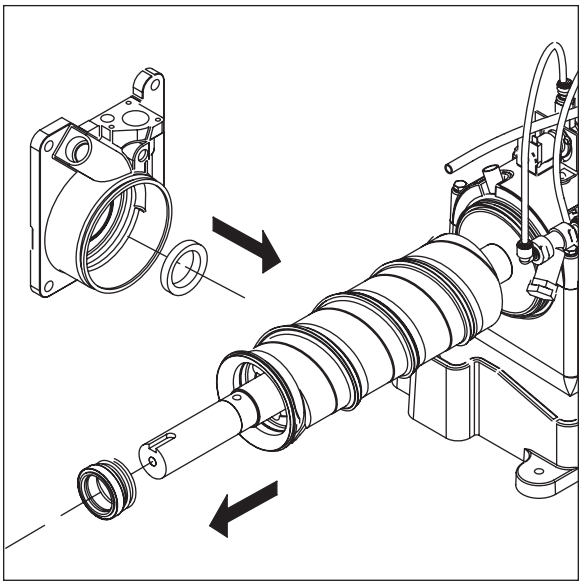


Fig. 17

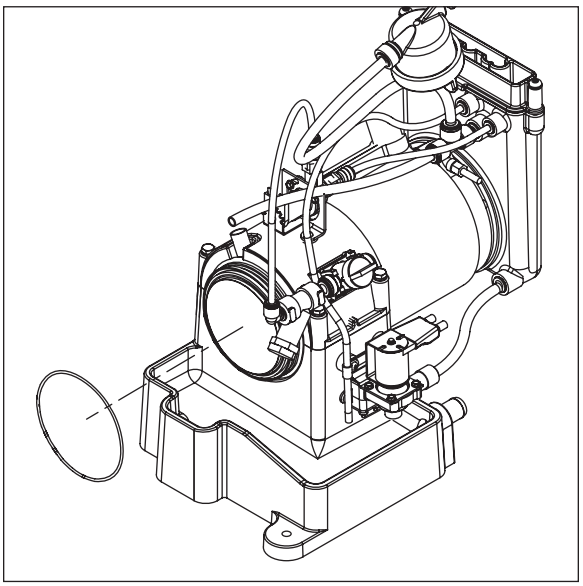
11. Remove and discard mating ring and seal.
12. Carefully remove auger.



Evaporator reassembly

1. Remove and inspect O ring seal. Discard if damaged in any way.
2. Clean O ring groove. Lubricate O ring and reinstall.

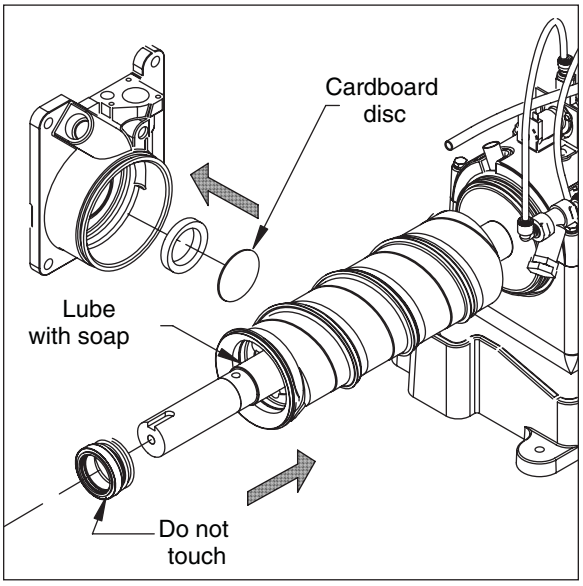
Fig. 18



3. Press new mating ring into main housing as shown.
4. Lube the shaft with liquid soap in the area shown and slip on seal and spring.

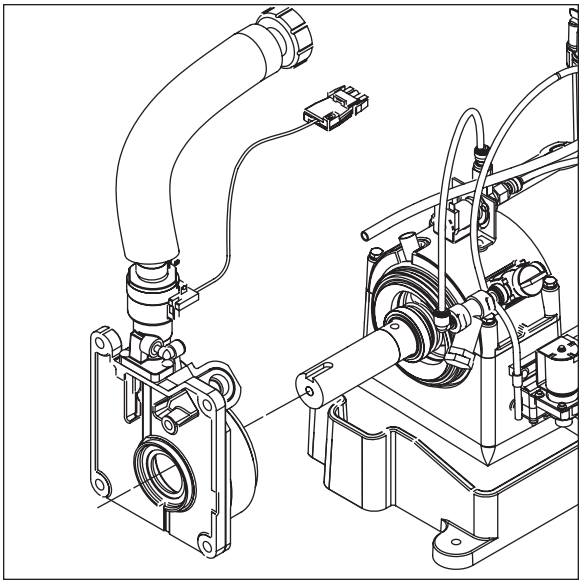
Note: Do not touch the sealing surfaces. Use cardboard disk to install.

Fig. 19



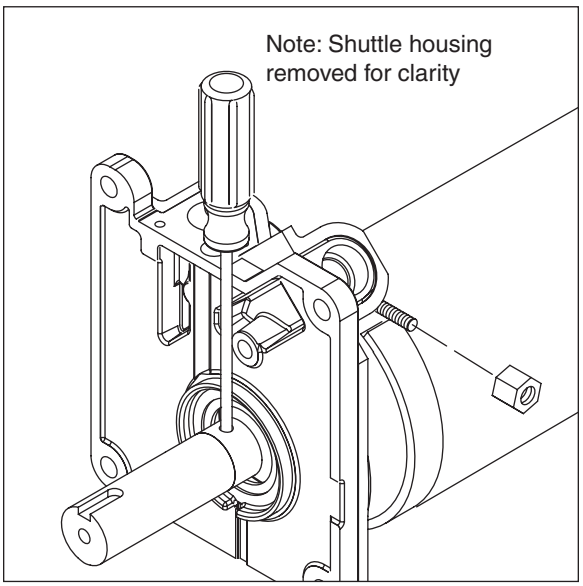
5. Reinstall main housing as shown.

Fig. 20



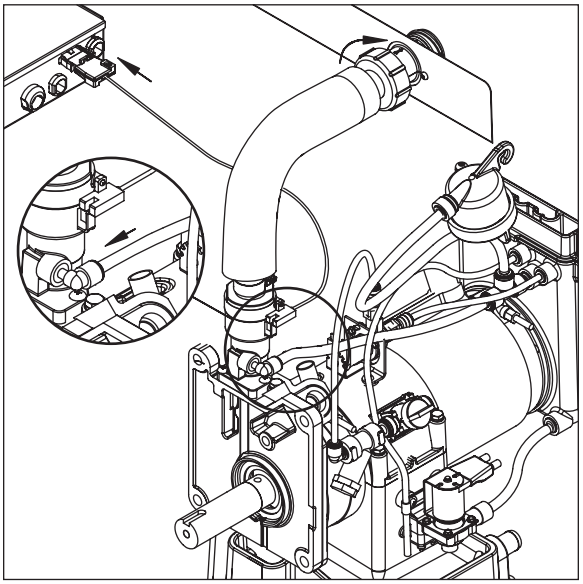
6. Orient auger shaft with keyway in the upward position.
7. Force main housing into position against evaporator and place 1/4" (7mm) diameter Phillips screwdriver into hole in the auger shaft.
8. Replace V-band clamp as shown.
9. Replace nut on V-band clamp and tighten.
10. Remove screwdriver.

Fig. 21



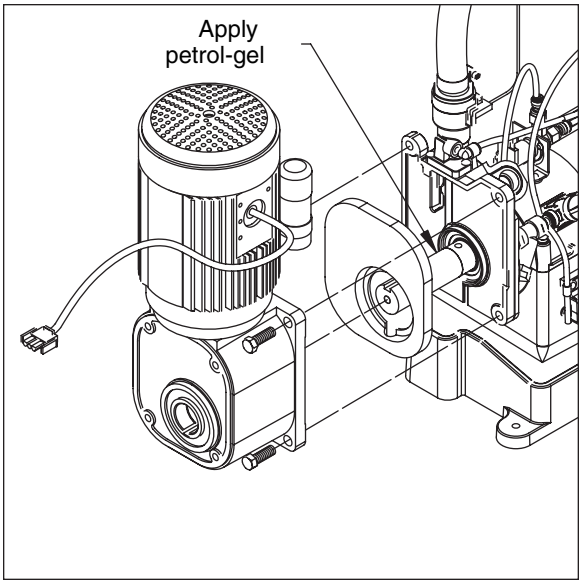
11. Reconnect transport tube to louvered docking assembly.
12. Plug sensor in at the electrical box.
13. Reconnect vent tube to the shuttle housing as shown.

Fig. 22



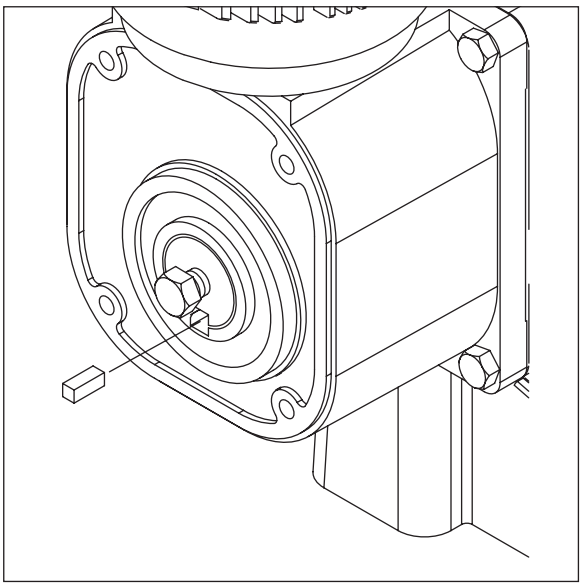
14. Apply a light coat of anti-seize compound to the auger shaft.
15. Install gearmotor, making sure that insulation is properly seated between gearmotor and main housing as shown.
16. Firmly tighten four gearmotor bolts in place.

Fig. 23



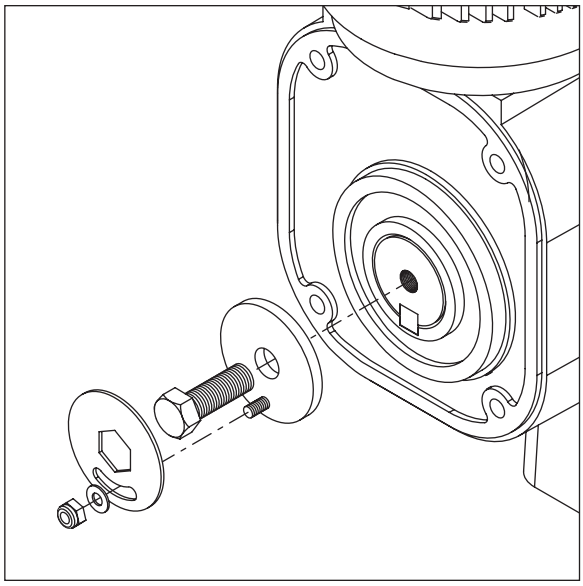
17. Insert a bolt into the auger shaft and finger tighten.
18. Using a wrench, rotate the shaft clockwise to align the keyways in the gear housing and the shaft so as to accept the key.
19. Insert the key into the keyway.

Fig. 24



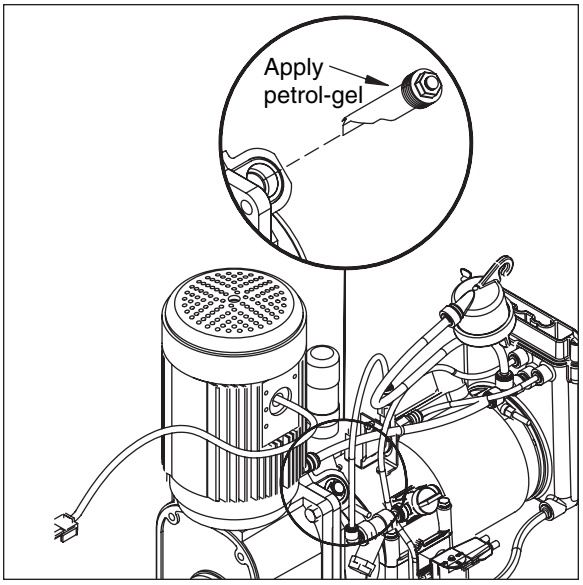
20. Remove bolt and reinstall the washer and bolt. Place retainer over bolt and secure with nut and washer.

Fig. 25



21. Lubricate body of stream diverter with petrol-gel and reinstall.
22. Plug gearmotor power cord into electrical box.

Fig. 26



Refrigeration system

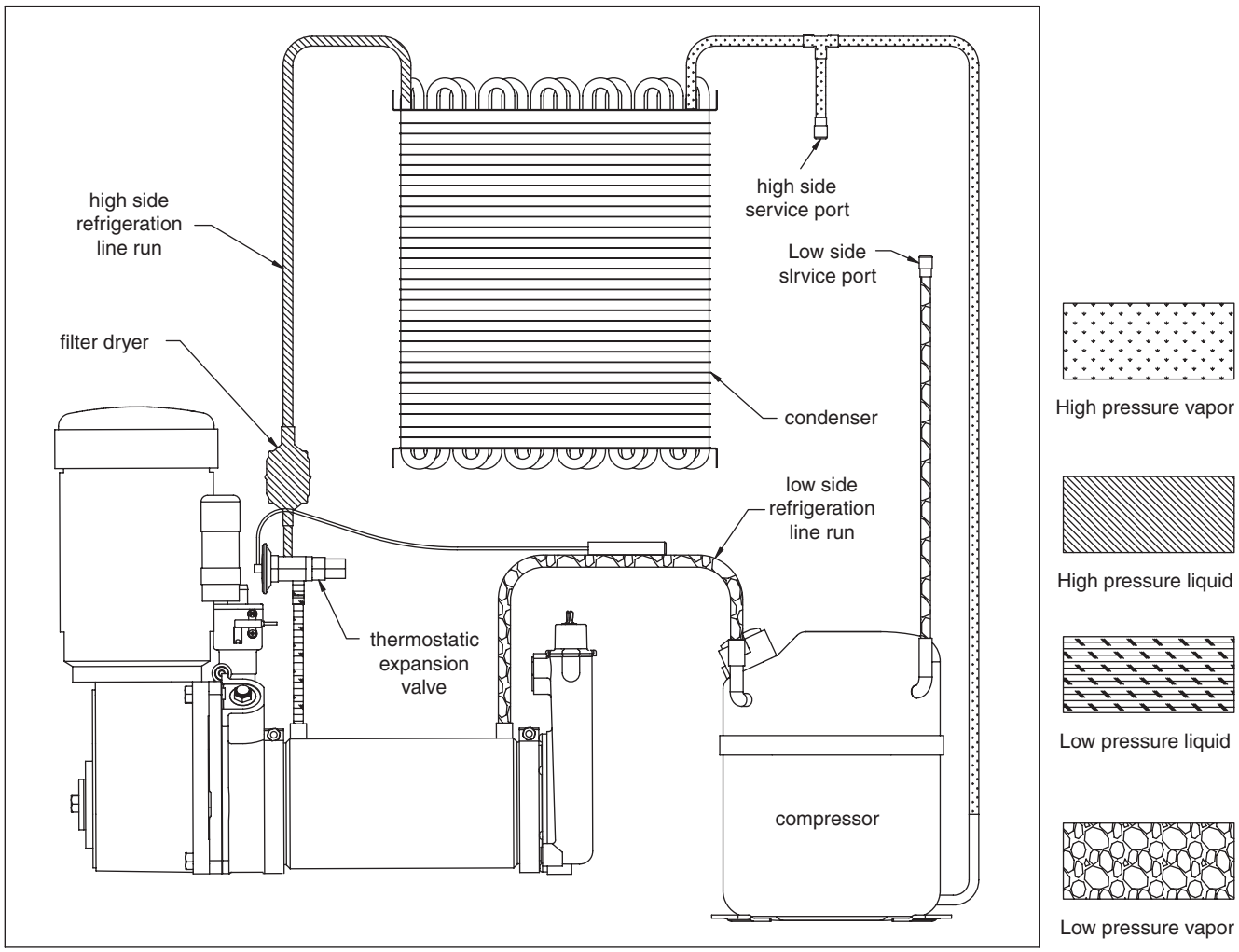
Refrigerant pressure data

	Air temperature				
Air-cooled condensers	60˚F/16˚C	70˚F/21˚C	80˚F/27˚C	90˚F/32˚C	100˚F/38˚C
Pressure (psig) discharge/suction	217/29psi 1497/200kPa 14.96/2.00bar	250/32psi 1724/221kPa 17.24/2.21bar	284/35psi 1959/241Kpa 19.58/2.41bar	325/39psi 2241/269kPa 22.41/2.69bar	366/43psi 2524/296kPa 25.23/2.96bar

	Water temperature				
Water-cooled condensers	60˚F/16˚C	70˚F/21˚C	80˚F/27˚C	90˚F/32˚C	100˚F/38˚C
Pressure (psig) discharge/suction	275/34 1896/234kPa 18.96/2.34bar	275/34 1896/234kPa 18.96/2.34bar	275/34 1896/234kPa 18.96/2.34bar	280/34 1931/234kPa 19.31/2.34bar	302/36 2082/248kPa 20.82/2.48bar

Note: The water control valve is factory set to maintain 275 ± 15 psi discharge pressure @ 70˚F water.

Refrigeration system diagram



Refrigeration charge

All service on refrigeration systems must be performed in accordance with all federal, state and local laws. It is the responsibility of the technician to ensure that these requirements are met. Recharging icemaker to other than factory specifications will void the warranty.

R404A icemaker charge specifications

Model	Charge	Refrigerant type
HCE1000A (air-cooled)	24oz (652g)	R404A
HCE1000W (water-cooled)	15oz (426g)	R404A

Refrigerant replacement requirements

Note: The evaporator and refrigerant tubing stubs are made of aluminum-bronze. When brazing copper tubing to the stubs, it is important to have clean surfaces and use MG Slik-Sil 104 or equivalent brazing stick for aluminum bronze brazing.

1. Non-contaminated refrigerant removed from any Follett refrigeration system can be recycled and returned to the same system after completing repairs. Recycled refrigerant must be stored in a clean, approved storage container. If additional refrigerant is required, virgin or reclaimed refrigerant that meets ARI standard 700-88 must be used.
2. In the event of system contamination (for example, a compressor burn out, refrigerant leak, presence of non-condensibles or moisture), the system must be repaired, evacuated and recharged using virgin or reclaimed refrigerant that meets ARI standard 700-88.
3. Follett Corporation does not approve of recovered refrigerants. Improper refrigeration servicing procedures will void the factory warranty.

Evacuation

Evacuate the system to a level of 500 microns. When the 500 micron level is reached, close all valves. Allow the system to sit for approximately 20 minutes. During this period the system pressure should not rise. If the system pressure rises and stabilizes there is moisture in the system and further evacuation is needed. If the pressure continues to rise check the system for leaks.

Ambients	Minimum	Maximum
Air temperature[1]	50˚F/10˚C	100˚F/37.8˚C
Water temperature[2]	45˚F/7˚C	90˚F/32.2˚C

[1]Ambient air temperature is measured at the air-cooled condenser coil inlet.
[2]Ambient water temperature is measured in the icemaker float reservoir.

Ice capacity test

Icemaker production capacity can only be determined by weighing ice produced in a specific time period.

1. Replace all panels on icemaker.
2. Run icemaker for at least 15 minutes.
3. Weigh and record weight of container used to catch ice.
4. Catch ice for 15 or 20 minutes.
5. Weigh harvested ice and record total weight.
6. Subtract weight of container from total weight.
7. Convert fractions of pounds to decimal equivalents (ex. 6 lbs 8oz = 6.5 lbs).

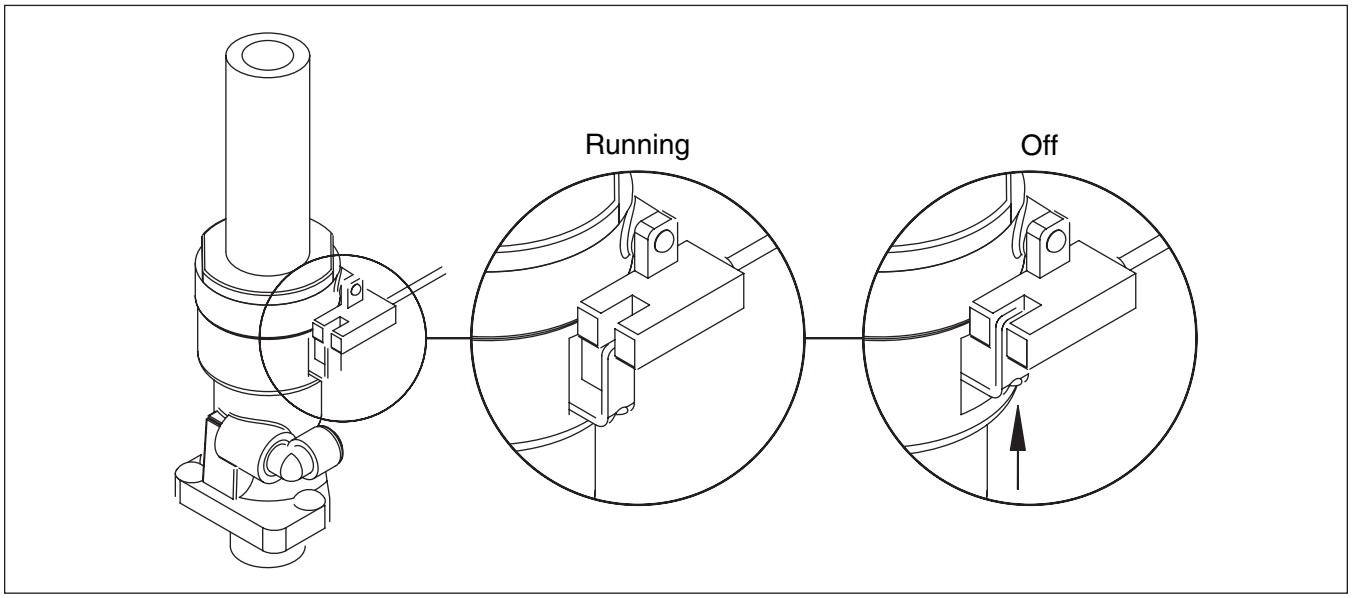
$$\frac{1440 \text{ min.} \times \text{wt. of ice produced}}{\text{Total test time in minutes}} = \text{Production capacity/24 hr. period}$$

8. Calculate production using following formula:
9. Calculated amount per 24 hours should be checked against rated capacity for same ambient and water temperatures in Ice Production Tables.

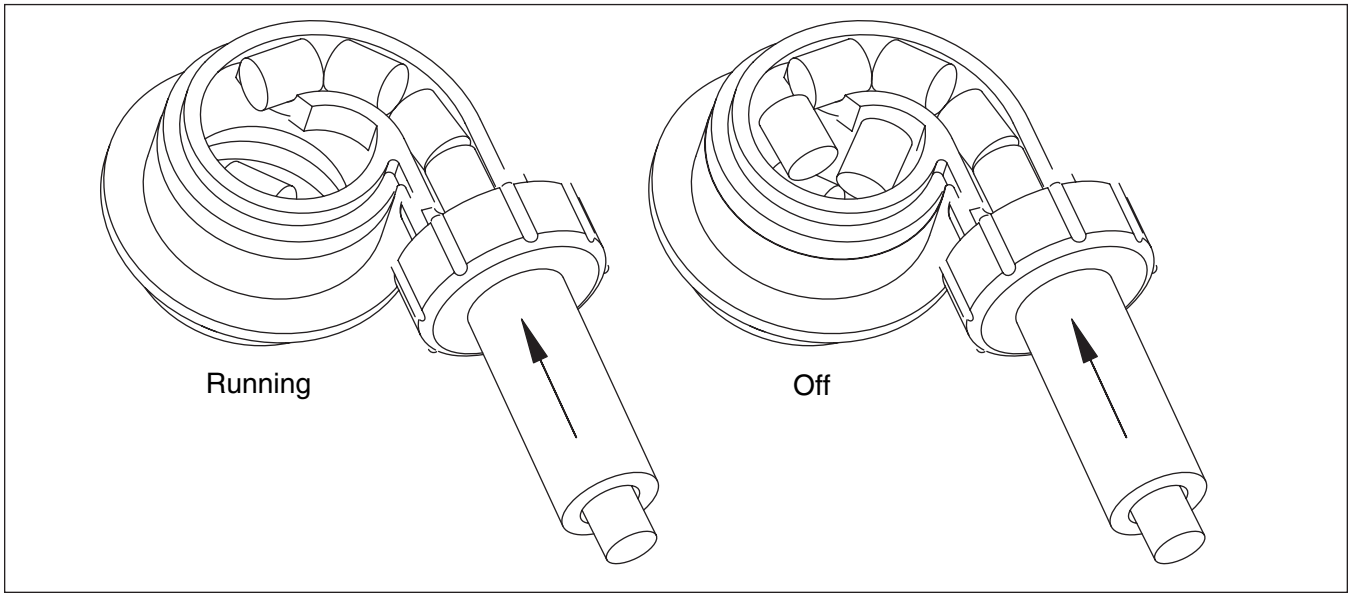
“Bin full” detection system

The Follett Horizon icemaker incorporates a unique “bin full” detection system that consists of the shuttle and actuator. The shuttle incorporates a flag and sensor. Referencing the figure below, the normal running position of the flag is down, out of the sensor. When the bin fills to the top and ice can no longer move through the tube, the machine will force the shuttle flag up into the sensor, shutting the machine off. The shuttle actuator, located above the ice bin allows the ice to curl up within it when the bin is full. In this way, there are no loads generated that would tend to lift off the lid of the bin.

Shuttle flag and sensor

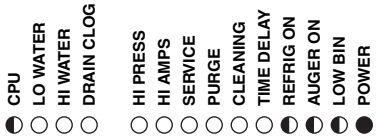
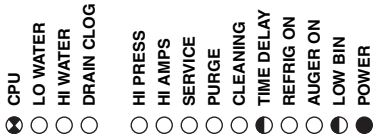


Shuttle actuator



Troubleshooting

Please see “Service” section for a description of each function.

Ice machine disposition	Possible causes	Corrective actions
Legend: ● ON ○ OFF ◐ ON or OFF ⊠ FLASHING		
1. Ice machine is in running condition but not making ice. 	1. Defective compressor. 2. Defective start relay. 3. Defective start capacitor. 4. Defective run capacitor. 5. Defective main contactor. 6. No output from PC board.	1. Replace compressor. 2. Replace start relay. 3. Replace start capacitor. 4. Replace run capacitor. 5. Replace main contactor. 6. Replace PC board.
2. The CPU is not flashing.  	1. Processor has been damaged.	1. Replace PC board.
3. Machine in TIME DELAY without full bin.  	1. Ice jamming due to improperly installed transport tube causing a false shuttle. 2. Shuttle stuck in up position. 3. Damaged or improperly installed thermostat (open). 4. Transport tube backed-out of coupling.	1. Correct transport tube routing. Install anti-kink elbows (#00136358) at bends in transport tube. 2. Repair or replace shuttle mechanism. 3. Replace or reposition thermostat. 4. Correct coupling installation with new star washer.
4. Ice machine is not making ice. Locked in PURGE. 	1. A self-flush occurred but could not drain evaporator due to a failed drain solenoid valve. 2. A self-flush occurred but could not drain evaporator due to water reservoir or ice machine not being level.	1. Replace drain solenoid valve. 2. Level ice machine. Check water reservoir to make sure it is not tilted towards the compressor.
5. Ice machine is not making ice. HI AMPS. 	1. Poor water quality causing ice to jam auger. 2. Damaged shuttle mechanism or thermostat (closed). 3. Kinked transport tube (thermostat systems). 4. Intermittent drive output from PC board. Evaporator will freeze causing a hi amps error. 5. Gearmotor is unplugged.	1. Clean ice machine. Increase flushing frequency. 2. Replace or repair shuttle mechanism/ thermostat. 3. Install anti-kink elbows (#00136358) at bends in transport tube. 4. Replace PC board. 5. Plug in gearmotor. *(see page 15 for “no current” details)*
6. Ice machine is not making ice. HI PRESSURE. 	1. High ambient temperatures >100˚F (38˚C). 2. Poor ventilation or air recirculation. 3. Clogged condenser. 4. Fan not working properly. No air flow. • Blocked fan blades • No fan output from PC board • Faulty fan motor	1. Air condition area to below 100˚F (38˚C). 2. Reposition ice machine or properly ventilate. Prevent ice machine exhaust from recirculating. 3. Clean condenser grille. 4. Correct air flow. • Remove any blockage from fan blades • Replace PC board • Replace fan motor

Ice machine disposition	Possible causes	Corrective actions

Legend: ● ON ○ OFF ◐ ON or OFF ⊠ FLASHING

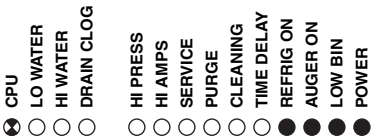
7. Ice machine is not making ice. Drain clog.

Possible causes	Corrective actions
1. Drain hose kinked or plugged causing water to back up.	1. Remove kink or blockage from drain hose.
2. Improper floor drain routing/pitch causing water to back up.	2. Re-route floor drain.
3. High TDS levels and leaking drain solenoid may cause an errant drain clog.	3. Clean area around drain sensor and/ or replace Drain solenoid valve.
4. No vent in drain line causing backup during a purge.	4. Add vent to drain line.

8. Ice machine is making ice. Excessive water in bin or coming into bin from transport tube.

Possible causes	Corrective actions
1. Defective water feed solenoid valve. Stuck in open position.	1. Replace water feed solenoid valve.

9. Ice machine is making ice. Excessive water in bin or coming into bin from transport tube.



Possible causes	Corrective actions
1. Failed water sensors. Processor assumes there is no water when there is water.	1. Clean or replace water probe assembly. Check wiring connections.
2. Blocked reservoir vent.	2. Clean or replace vent tubes.

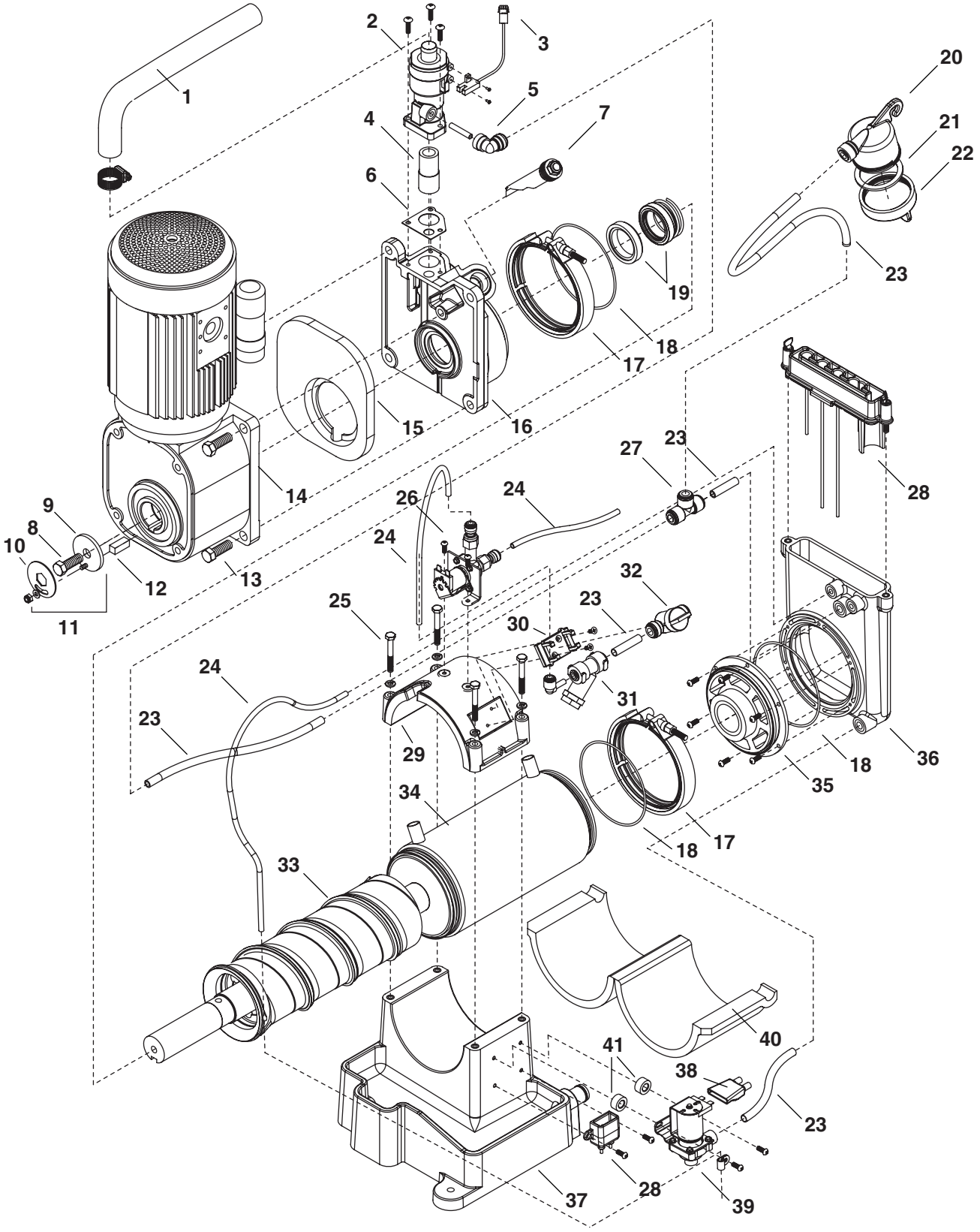
10. Ice machine is not making ice. Lo water.

Possible causes	Corrective actions
1. Water supply is turned off.	1. Turn water supply on. If evaporator was completely empty the reset button may have to be pressed to restart the ice machine.
2. Low water pressure.	2. Ice machine will eventually start when water reaches normal lo level.
3. Defective water feed solenoid valve. Stuck in closed position.	3. Replace water feed solenoid valve.
4. No water feed output from PC board.	4. Replace PC board.

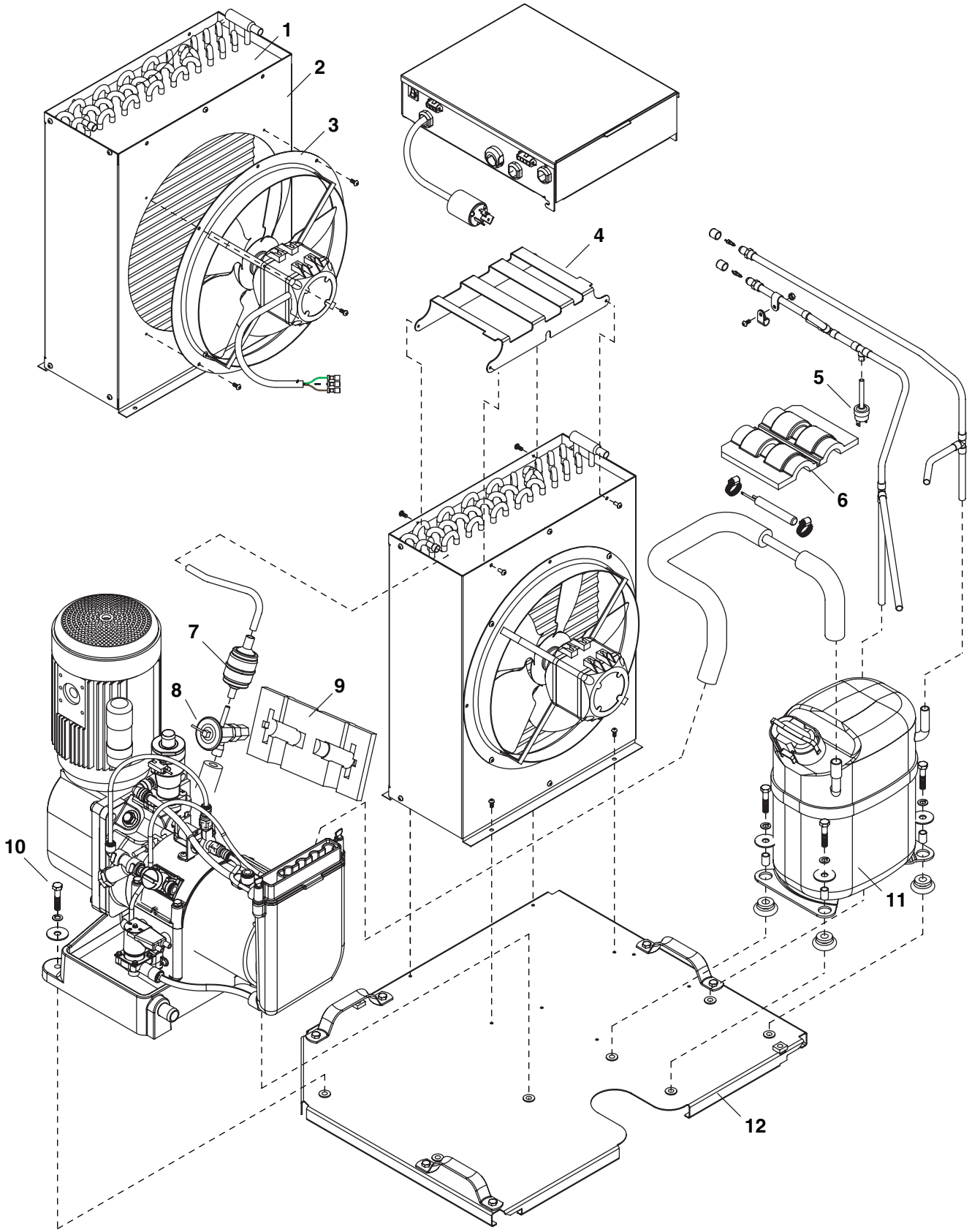
Replacement parts

Order parts online
www.follettice.com

Evaporator assembly



Reference #	Description	Part #
1	Tube, ice transport, molded	00130666
2	Shuttle assembly (includes 00115600 & 0013066)	00130815
3	Switch, optical	00130849
4	Compression nozzle	00115774
5	Elbow, water	00134502
6	Gasket, shuttle	00115600
7	Stream divider	00142513
8	Auger bolt	00116988
9	Washer	00161513
10	Retainer, auger bolt	00161366
11	Kit, auger bolt (auger bolt, washer, retainer, nut and washer)	00161406
12	Key	00117804
13	Bolts, gearmotor mounting (4)	00130641
14	Gearmotor, 240V (includes capacitor)	00130807
15	Gasket, gearmotor	00121632
16	Main housing (includes 00112946 & 00116962)	00142539
17	Coupling, V-band	00130708
18	O ring	00116962
19	Seal, auger shaft	00112946
20	Cup, sanitizer	00130674
21	Gasket, sanitizer	00124032
22	Cap, sanitizer (includes 00124032)	00130880
23	Tubing, water, 3/8" OD	502719
24	Tubing, water, 1/4" OD	502079
25	Hardware, mounting, evaporator cap	00130989
26	Solenoid, water feed (240V)	00130831
27	Tee, water	00134494
28	Sensor assembly, water level and drain clog	00130682
29	Cap, evaporator (includes 00125468 & 00130989)	00130740
30	Clip, water shut-off valve	502922
31	Strainer, water	502920
32	Valve, shut-off, water	502921
33	Auger (includes 00112946 & 00116962)	00147249
34	Evaporator (includes 00112946, (2) 00116962 & 0012116)	00130724
35	Journal housing and bearing (includes (2) 00116962)	00130716
36	Reservoir, water	00130690
37	Base, evaporator	00130732
38	Boot, solenoid	00160309
39	Solenoid, purge (240V)	00130765
40	Insulation, evaporator	00121616
41	Spacers, solenoid	00160317
Not shown	Insulation, evaporator cap	00125468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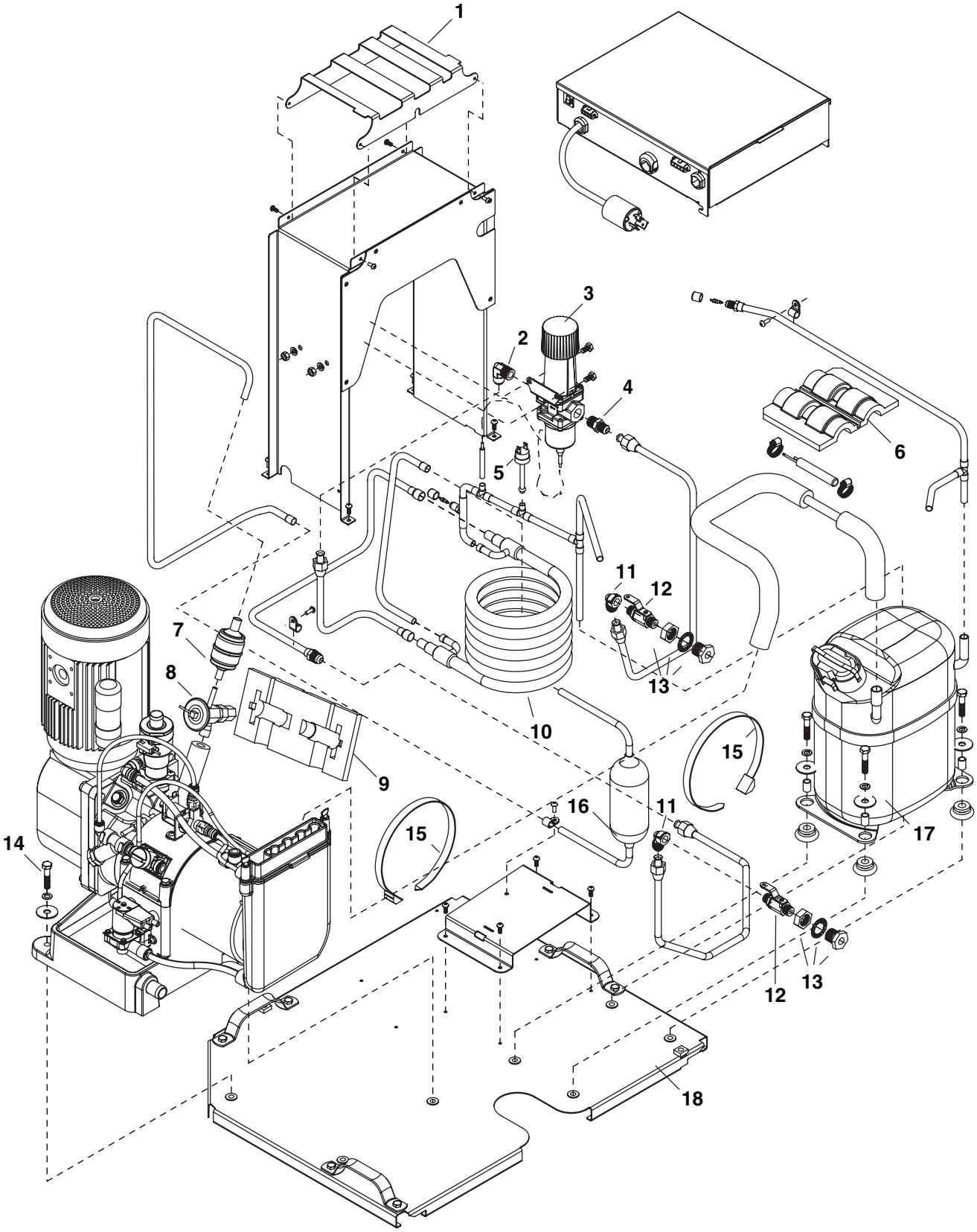
Reference #	Description	Part #
1	Condenser (includes 00130922)	00130914
2	Shroud, condenser	00130922
3	Fan motor assembly	00130930
4	Electrical box support	00156035
5	Cut-out, high pressure safety	00117077
6	Insulation, bulb, TXV	00106534
7	Drier	502724
8	Valve, expansion, thermal (includes 502830 and 00106534)	00130997
9	Insulation, TXV	502830
10	Hardware, evaporator mounting base (set of four)	00130971
11	Compressor	00121582
12	Base, icemaker	00130856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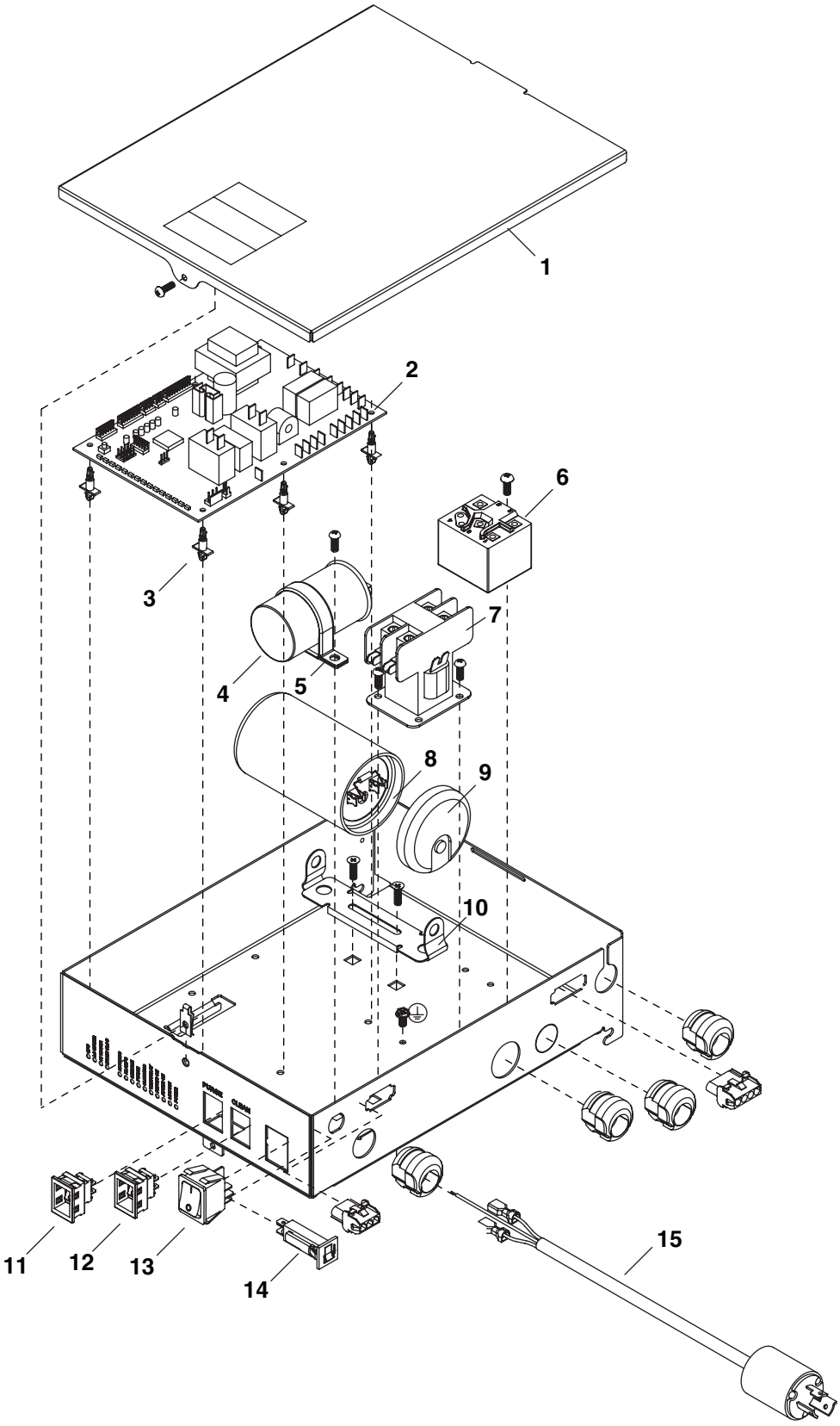
Reference #	Description	Part #
1	Electrical box support	00156035
2	Elbow, water	00129486
3	Valve, water regulating	00131052
4	Union, water	202148
5	Cut-out, high pressure safety	00117077
6	Insulation, bulb, TXV	00106534
7	Drier	502724
8	Valve, expansion, thermal (includes 502830 and 00106534)	00130997
9	Insulation, TXV	502830
10	Condenser, w/c	00117234
11	Elbow, water, 90˚	00129478
12	Valve, shut-off, water	502222
13	Coupling	206411
14	Hardware, evaporator mounting base	00130971
15	Ty-rap	204584
16	Receiver	00123109
17	Compressor	00121582
18	Base, icemaker	00130856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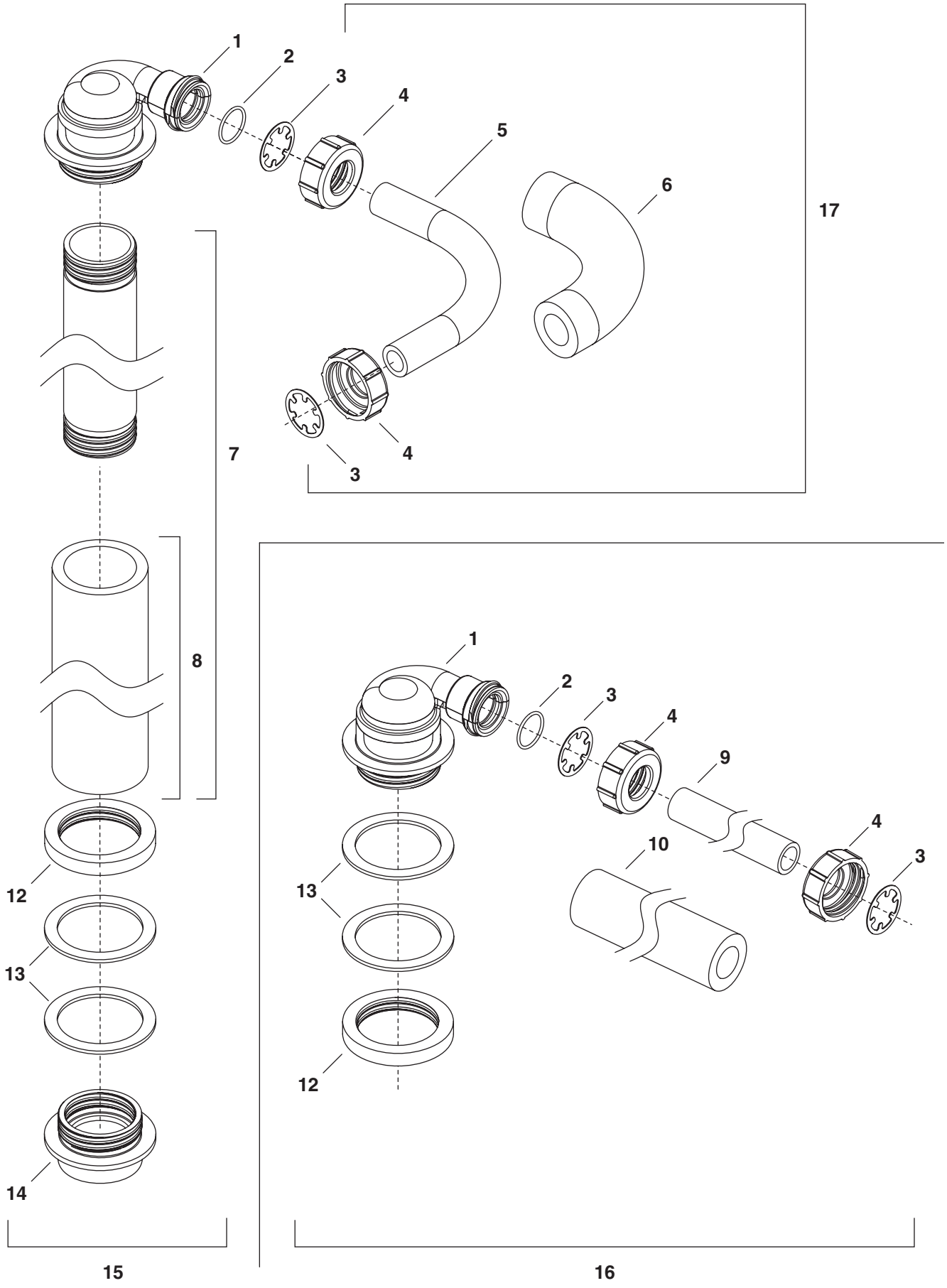
Reference #	Description	Part #
1	Cover, electrical box, air/water-cooled	00130872
2	Board, control circuit, 240V (includes 00130906)	00132902
3	Stand off's (set of 6)	00130906
4	Capacitor, compressor run	00121814
5	Clamp, run capacitor	00117044
6	Relay, compressor starting	00141648
7	Contactor	00117010
8	Capacitor, compressor starting	00141663
9	Cap, capacitor	00123216
10	Bracket, capacitor	207625
11	Switch, evaporator purge	00114371
12	Switch, evaporator clean	00117036
13	Switch, icemaker power	208867
14	Circuit breaker, 4 amp	00126912
15	Power lead, 240V	00163923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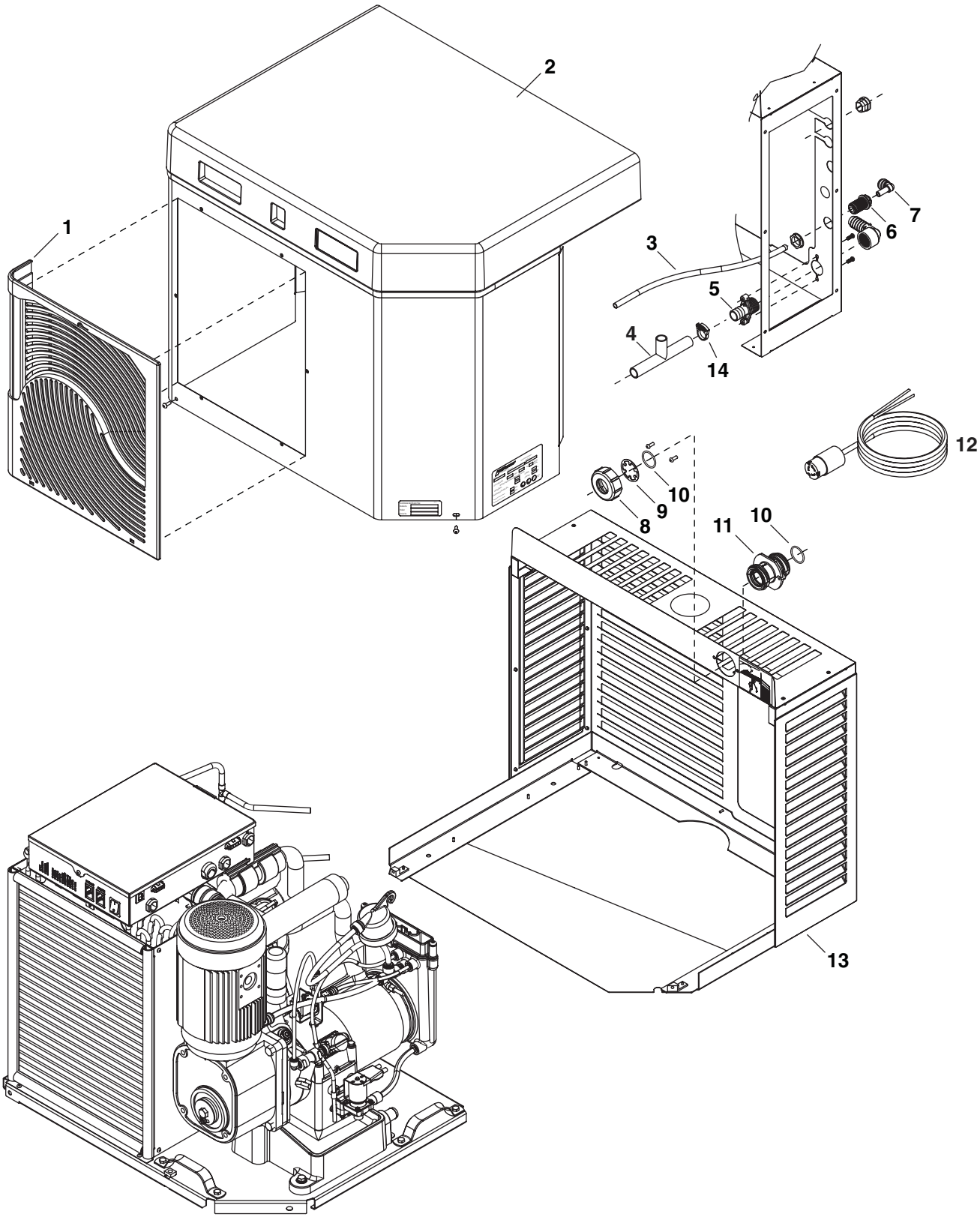
Reference #	Description	Part #
1	Shuttle actuator	00131029
2	O ring, ice tube	00123836
3	Retainer, ice tube	00129270
4	Nut, ice tube coupling	00122804
5	Tube, ice-fill, coupling to shuttle actuator	00119222
6	Insulation, coupling to shuttle actuator	00132605
7	Tube, ice-fill, 1400 top mount (includes 00128173)	00131011
8	Insulation, fill tube, 1400 top mount	00128173
9	Ice transport tube, 10' (3m)	502522
9	Ice transport tube, 20' (6m)	502523
10	Insulation, transport tube	501176
11	Coupling assembly	00131003
12	Ring, locking	00126508
13	Gasket, coupling	00126532
14	Coupling, fill tube	00126466
15	Integration kit, top mount	00134882
16	Integration kit, Satellite-fill (requires transport tube)	00134890
17	Assembly, (3, 4, 5 & 6)	00131037
Not shown	Anti-kink elbow kit	00136358
Not shown	Extension-fill tube, 9"	00135723
Not shown	Extension-fill tube, 4"	00153684
Not shown	Follett SafeCLEAN ice machine cleaner (case of 24 x 7oz packets)	00132001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Reference #	Description	Part #
1	Grille, intake	00122846
2	Front cover, air- & water-cooled (includes 00122846)	00130625
3	Tubing, water, 1/4" OD	502079
4	Tubing, drain	00144923
5	Fitting, drain	00109728
6	Fitting, water inlet	502924
7	Elbow, water inlet	502925
8	Nut, ice tube coupling	00122804
9	Retainer, ice tube	00129270
10	O ring, ice tube	00123836
11	Coupling, ice tube	00123091
12	Power cord, 240V	00163915
13	Louvered docking assembly (includes 0123182)	00130658
14	Clamp, drain line	00114520
Not shown	Gasket, intake	00135574
Not Shown	Louver, intake/exhaust (13.75" x 17.75")	00128066

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